

**REMARKS**

Claims 1, 3-6, 9-15, 17, 19, and 21 are all the claims presently pending in the application. The Abstract, the specification, the drawings, and claims 1, 3-4, 9, 11, 14-15, 17, 19, and 21 are amended to more clearly define the invention and claims 2, 7-8, 16, 18, and 20 are canceled. Claims 1, 15, 17, 19, and 21 are independent.

These amendments are made only to more particularly point out the invention for the Examiner and not for narrowing the scope of the claims or for any reason related to a statutory requirement for patentability.

Applicant also notes that, notwithstanding any claim amendments herein or later during prosecution, Applicant's intent is to encompass equivalents of all claim elements.

Claims 7-8 stand rejected under 35 U.S.C. § 112, first paragraph. Claim 19 stands rejected under 35 U.S.C. § 112, second paragraph. Claims 1-2, 12, 17-18, and 21 stand rejected under 35 U.S.C. § 102(e) as being anticipated by the Srinivasan reference (U.S. Patent No. 6,145,002). Claims 3-6, 9-11, 15-16, and 19-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Srinivasan reference (U.S. Patent No. 6,145,002) in view of the Farris reference (U.S. Patent No. 5,541,917). Claims 13-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Srinivasan reference (U.S. Patent No. 6,145,002) in view of the Reber et al. reference (U.S. Patent No. 5,938,726).

These rejections are respectfully traversed in the following discussion.

**I. THE CLAIMED INVENTION**

A first exemplary embodiment of the claimed invention, as defined by independent claim 1, is directed to a connection apparatus for a public network switching system, the

switching system having a first plurality of line ports to which a plurality of user terminals are connected, a second plurality of line ports, a first plurality of trunk ports to which a plurality of Internet lines are connected, and a second plurality of trunk ports. The apparatus includes a switching unit having a plurality of diverging ports adapted for connection to said second plurality of trunk ports and a plurality of converging ports adapted for connection to the second plurality of line ports, and a control unit responsive to a request signal from one of the user terminals for establishing in the switching unit at least one connection specified by said request signal between one of the diverging ports and at least one of the converging ports. The public network switching system establishes a connection between the one diverging port and the one user terminal and at least one connection between the second plurality of line ports and the plurality of trunk ports corresponding in number to the at least one connection established in the switching unit.

A second exemplary embodiment of the claimed invention, as defined by independent claim 15, is directed to a connection apparatus for a public network switching system which serves user terminals via a plurality of ADSL (asymmetric digital subscriber line) modems. The switching system having a first plurality of line ports to which the ADSL modems are connected, a second plurality of line ports, a first plurality of trunk ports to which a plurality of Internet lines are connected, and a second plurality of trunk ports. The apparatus includes a switching unit having a first plurality of diverging ports adapted for connection to the second plurality of trunk ports, a second plurality of diverging ports adapted for connection to the ADSL modems, and a plurality of converging ports adapted for connection to the second plurality of line ports, and a control unit responsive to a request signal from one of the ADSL modems for establishing in the switching unit at least one first connection between one of the

first plurality of diverging ports and at least one of the converging ports specified by the request signal and at least one second connection between one of the second plurality of diverging ports and the at least one of the converging ports. The public network switching system establishing a connection between the one ADSL modem and the one of said first plurality of diverging ports and at least one connection between the second plurality of line ports and the plurality of trunk ports corresponding to the at least one first connection established in the switching unit.

A third exemplary embodiment of the claimed invention, as defined by independent claim 17, is directed to a communication system that includes a public network switching system having a first plurality of line ports to which a plurality of user terminals are connected, and a first plurality of trunk ports to which a plurality of Internet lines are connected, and a second plurality of trunk ports, a switching unit having a plurality of diverging ports connected to the second plurality of trunk ports and a plurality of converging ports connected to a second plurality of line ports, and a control unit responsive to a request signal from one of the user terminals for establishing in the switching unit at least one connection specified by the request signal between one of the diverging ports and at least one of the converging ports. The public network switching system establishing a connection between the one diverging port and the one user terminal, and at least one connection between the second plurality of line ports and the first plurality of trunk ports corresponding to the at least one connection established in the switching unit.

A fourth exemplary embodiment of the claimed invention, as defined by independent claim 19, is directed to a communication system that includes a plurality of ADSL (asymmetric digital subscriber line) modems, a public network switching system having a

first plurality of line ports to which the ADSL modems are connected, a second plurality of line ports, a first plurality of trunk ports to which a plurality of Internet lines are connected, and a second plurality of trunk ports, a switching unit having a first plurality of diverging ports connected to the second plurality of trunk ports, a second plurality of diverging ports connected to the ADSL modems, and a plurality of converging ports connected to the second plurality of line ports, and a control unit responsive to a request signal from one of the ADSL modems for establishing in the switching unit at least one first connection between one of the first plurality of diverging ports and at least one of the converging ports specified by the request signal and at least one second connection between one of the second plurality of diverging ports and the at least one of the number of the converging ports. The public network switching system establishing a connection between the one ADSL modem and the one of the first plurality of diverging ports and at least one connection between the second plurality of line ports and the first plurality of trunk ports corresponding to the at least one first connection established in the switching unit.

A fifth exemplary embodiment of the claimed invention, as defined by independent claim 21, is directed to a method of communication for a public network switching system by using a switching unit. The public network switching system having a first and second plurality of line ports, and a first and second plurality of trunk ports, and the switching unit having a plurality of diverging ports and a plurality of converging ports. A plurality of user terminals are connected to the first plurality of line ports and a plurality of Internet lines connected to the first plurality of trunk ports. The method includes connecting the plurality of diverging ports to the second plurality of trunk ports, connecting the plurality of converging ports to the plurality of line ports, receiving a request signal from one of the user

terminals via one of the first plurality of line ports establishing, in the public network switching system, a connection between the one of the first plurality of line ports and one of the second plurality of trunk ports and at least one connection specified by the request signal between said second plurality of line ports and the first plurality of trunk ports, and establishing, in the switching unit, at least one connection between one of the diverging ports and at least one of the converging ports corresponding to the at least one connection established in the public network switching system. The one of the diverging ports being connected to the one of the second plurality of trunk ports.

Conventional dial-up IP services allow subscribers to establish dial-up connections to Internet service providers through a public switched telephone network. The switching systems in these public switched telephone networks connect these subscribers to the Internet service providers in a one-to-one correspondence, thereby requiring that the Internet service providers install equipment in the public switched telephone network that can communicate to the modems of the subscribers with perfect compatibility.

Additionally, as the numbers of communications protocols and transmission speeds increase, the lines that are leased to the Internet service providers must be grouped according to these protocols and transmission speeds using phone numbers to maintain compatibility.

Moreover, with a large number (M) of user terminals requesting simultaneous identical branch connections for a large number (N) of Internet service providers a very large number (M x N) of branch connection paths is required.

Thus, these conventional dial-up IP services suffer the high cost of installed equipment and numbers of leased lines that cannot efficiently provide the service.

In stark contrast, the present invention provides a switching unit that connects to the

switching system of the public switched telephone unit. The switching unit of the present invention is capable of significantly reducing the number of branch connections that are required to be established in the switching system of the public switched telephone network. For example, when a large number (M) of user terminals requesting simultaneous identical branch connections for a large number (N) of Internet service providers, (M x N) paths are established, in the switching unit of the present invention only (M + N) paths need to be established in the switching system of the public switched telephone network. In this manner, the present invention can greatly relieve the burden of the switching system of the public switched telephone network.

Further, an exemplary embodiment of the present invention may further include multiplexers. In this manner, since the lines between the switching system of the public switched telephone network and the Internet service providers are always lightly loaded with traffic, the access line of each Internet service provider may support multiplexed traffic for a number of user terminals.

Additionally, due to the significant increase in the utilization efficiency of these access lines, the Internet service providers are relieved of the burden of paying high access charges for providing flat rate services to Internet subscribers.

## **II. THE 35 U.S.C. § 112, SECOND PARAGRAPH REJECTION**

The Examiner alleges that claim 19 is indefinite. While Applicant submits that such would be clear to one of ordinary skill in the art taking the present Application as a whole, to speed prosecution claim 19 has been amended in accordance with Examiner Kading's very helpful suggestions.

In view of the foregoing, the Examiner is respectfully requested to withdraw this rejection.

### III. THE PRIOR ART REJECTIONS

#### A. The 102(e) Srinivasan reference rejection

Regarding the rejection of claims 1-2, 12, 17-18, and 21, the Examiner alleges that the Srinivasan reference teaches the claimed invention. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by the Srinivasan reference.

The Srinivasan reference does not teach or suggest the features of the present invention including a switching unit that connects to the switching system of the public switched telephone unit. As explained above, the switching unit of the present invention is capable of significantly reducing the number of branch connections that are required to be established in the switching system of the public switched telephone network. For example, when a large number (M) of user terminals requesting simultaneous identical branch connections for a large number (N) of Internet service providers, (M x N) paths are established in the switching unit of the present invention and only (M + N) paths need to be established in the switching system of the public switched telephone network. In this manner, the present invention can greatly relieve the burden of the switching system of the public switched telephone network.

The Examiner points to Figure 1, element 20 and col. 5, lines 41-43 of the Srinivasan reference in an attempt to allege that the Srinivasan reference discloses a switching unit connected to the switching system. However, contrary to the Examiner's allegation, the

Srinivasan reference merely discloses a conventional public telephone central office switch. In other words, the central office switch 20 disclosed by the Srinivasan reference corresponds to the public telephone switching system 10 which is shown Fig. 1 of the present specification. The Srinivasan reference does not teach or suggest a switching unit 16 connected to the switching system 10.

The Srinivasan reference only has one device which provides the capability of switching routes and whenever the Srinivasan reference discusses making switches the Srinivasan reference explains that instructions are provided to the central office switch 20 in order to make the appropriate switches (see for example col. 7, lines 10-12, col. 8, lines 10-15, and lines 19-22).

Indeed, the system disclosed by the Srinivasan reference suffers from the same problems that are solved by the present invention. As is clearly illustrated by Fig. 1 of the Srinivasan reference, all communications from the subscriber station 10 are routed through the central office switch 20 (based upon instructions provided by the Internet access manager 50) directly to the Internet service providers 32. Therefore, in the same manner as described above in relation to the conventional dial-up access system, the system that is disclosed by the Srinivasan reference connects subscribers to the Internet service providers 32 in a one-to-one correspondence. Therefore, requiring that the Internet service providers 32 install equipment in the public switched telephone network 20 that can communicate to the modems of the subscribers 10 with perfect compatibility.

Additionally, as the numbers of communications protocols and transmission speeds increase, the lines that are leased to the Internet service providers 32 must be grouped according to these protocols and transmission speeds using phone numbers to maintain



compatibility.

Moreover, with a large number (M) of user terminals requesting simultaneous identical branch connections for a large number (N) of Internet service providers a very large number (M x N) of branch connection paths.

Thus, these conventional dial-up IP services suffer for the high cost of installed equipment and numbers of leased lines that cannot efficiently provide the service.

In stark contrast to the system disclosed by the Srinivasan reference, the present invention provides a switching unit that connects to the switching system of the public switched telephone unit. The switching unit of the present invention is capable of significantly reducing the number of branch connections that are required to be established in the switching system of the public switched telephone network. For example, when a large number (M) of user terminals requesting simultaneous identical branch connections for a large number (N) of Internet service providers, (M x N) paths are established in the switching unit of the present invention, only (M + N) paths need to be established in the switching system of the public switched telephone network. In this manner, the present invention can greatly relieve the burden of the switching system of the public switched telephone network.

Additionally, due to the significant increase in the utilization efficiency of these access lines, the Internet service providers are relieved of the burden of paying high access charges for providing flat rate services to Internet subscribers.

Clearly, contrary to the Examiner's allegations, the Srinivasan reference does not teach or suggest a switching unit that connects to the switching system of the public switched telephone unit.

Therefore, the Srinivasan reference does not teach or suggest each and every element

of the claimed invention. Thus, the Examiner is respectfully requested to withdraw this rejection of claims 1-2, 12, 17-18, and 21.

**B. The Srinivasan reference in view of the Farris reference**

The Examiner alleges that the Farris reference would have been combined with the Srinivasan reference to form the claimed invention. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, the references are directed to completely different matters and problems.

Specifically, the Srinivasan reference is directed to addressing the problems of limited capacity of the limited numbers of servers maintained by Internet service providers and allowing a users subscription rate to be based upon a time-of-usage option (col. 1, lines 21-33).

In stark contrast, the Farris reference is directed to the problems of more closely integrating elements of existing Advanced Intelligent Networks with new video dial tone and packet data networks. Therefore, one of ordinary skill in the art who was concerned with the problems of limited capacity of the limited numbers of servers maintained by Internet service providers and allowing a users subscription rate to be based upon a time-of-usage option as the Srinivasan reference is concerned with addressing would not have referred to the Farris reference because the Farris reference is directed to the completely different and unrelated problems of more closely integrating elements of existing Advanced Intelligent Networks

with new video dial tone and packet data networks. Thus, the references would not have been combined, absent hindsight.

Further, Applicant submits that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. Indeed, the Examiner does not even support the combination by identifying a reason for combining the references.

The Examiner alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system disclosed by the Srinivasan reference to include a multiplexer that is disclosed by the Farris reference “to efficiently transmit data.”

However, the Examiner fails to cite any portion of the references which teach or suggest the alleged motivation that adding a multiplexer would be desirable to “efficiently transmit data.”

Indeed, the Examiner fails to provide any explanation at all as to how adding such a multiplexer would transmit data any more efficiently than how the system disclosed by the Srinivasan reference already transmits data.

The Examiner has failed to provide a prima facie case of obviousness for failing to allege a reason or motivation for such an alleged modification (see M.P.E.P. § 2143).

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the teachings.”

M.P.E.P. §2143

Clearly, there is no motivation or suggestion in the references to urge the combination

as alleged by the Examiner.

Should the Examiner allege that the Examiner's motivation is not fabricated out of thin air, Applicant requests that the Examiner point out with particularity where such motivation may be found in the applied references. Alternatively, should the Examiner allege that the motivation is in the knowledge generally available to one of ordinary skill in the art, Applicant hereby requests that the Examiner provide evidence of such an allegation by either citing a reference in support of the Examiner's allegation or provide a Declaration. (M.P.E.P. § 2144.03).

Even assuming arguendo that one of ordinary skill in the art would have been motivated to combine these references, the combination would not teach or suggest each and every element of the claimed invention.

As explained previously, the Srinivasn reference discloses the same type of dial-up Internet access that is described by the background of the present specification and the system disclosed by the Srinivasan reference is subject to the same problems which are solved by the present invention.

The Farris reference does not remedy the deficiencies of the Srinivasan reference. Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 3-6, 9-11, 15-16, and 19-20.

**C. The Srinivasan reference in view of the Reber et al. reference**

The Examiner alleges that the Reber et al. reference would have been combined with the Srinivasan reference to form the claimed invention. Applicant submits, however, that these references would not have been combined and even if combined, the combination

would not teach or suggest each and every element of the claimed invention.

Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, the references are directed to completely different matters and problems.

Specifically, as explained above, the Srinivasan reference is directed to addressing the problems of limited capacity of the limited numbers of servers maintained by Internet service providers and allowing a users subscription rate to be based upon a time-of-usage option (col. 1, lines 21-33).

In stark contrast, the Reber et al. reference is directed to the completely different and unrelated problems of navigating the resources of the World Wide Web (col. 1, lines 26-63). Therefore, one of ordinary skill in the art who was concerned with addressing the problems of limited capacity of the limited numbers of servers maintained by Internet service providers and allowing a users subscription rate to be based upon a time-of-usage option is the Srinivasan reference is concerned with solving would not have referred to the Reber et al. reference because the Reber et al. reference is directed to the completely different and unrelated problems of navigating the resources of the World Wide Web. Thus, the references would not have been combined, absent hindsight.

Further, Applicant submits that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. Indeed, the Examiner does not even support the combination by identifying a reason for combining the references.

Even assuming arguendo that one of ordinary skill in the art would have been motivated to combine these references, the combination would not teach or suggest each and every element of the claimed invention.

As explained previously, the Srinivasn reference discloses the same type of dial-up Internet access that is described by the background of the present specification and the system disclosed by the Srinivasan reference is subject to the same problems which are solved by the present invention.

The Reber et al. reference does not remedy the deficiencies of the Srinivasan reference. Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 13 and 14.

#### **IV. FORMAL MATTERS AND CONCLUSION**

The Office Action objects to the Abstract and claims 1, 8, 14-15, 17, 19, and 21. This Amendment amends the Abstract and claims 1, 14-15, 17, 19, and 21 in accordance with Examiner Kading's very helpful suggestions. Applicant respectfully requests withdrawal of these objections.

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1, 3-6, 9-15, 17, 19, and 21, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

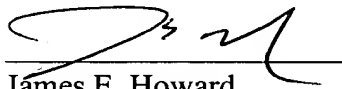
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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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